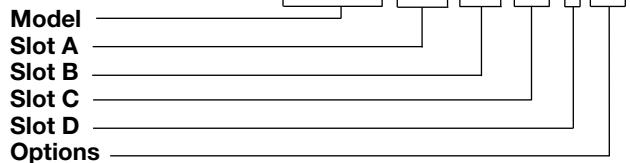
Digital Panel Meters
Modular Indicator and Controller
Type UDM35

- Multi-input modular instrument 3 1/2 DGT LED
- 0.1% RDG basic accuracy
- TRMS AC current and voltage measurements
- AC/DC current measurements: selectable full scales (200µA to 5A)
- AC/DC voltage measurements: selectable full scales (200mV to 500V)
- °C or °F temperature measurements (Pt100-250-500-1000, Ni100, TC J-K-S-T-E)
- Resistance measurements: selectable full scales (20Ω to 20kΩ)
- Dual rate, speed, frequency and period measurement (0.001Hz to 50kHz)
- Up to 4 independent alarm set-points (optional)
- 20mA/10VDC analog output (optional)
- Serial port RS485 or RS232 (optional)
- MODBUS, JBUS communication protocol
- Front protection degree: IP67, NEMA12
- Linearization of Hz inputs up to 16 points

Product Description

µp-based digital panel meter, 3 1/2 DGT LED indicator, for current, voltage, temperature, resistance, rate, frequency, speed and period measurements. Measuring ranges and functions easily programmable from the key-pad or from the PC by means of optional Udm-Soft software. UDM35 includes storage min-max functions and double level protection password. Housing for panel mounting with front protection degree: IP67, NEMA12.

How to order UDM35 XXX XX XX X XX

- Model
- Slot A
- Slot B
- Slot C
- Slot D
- Options

How to order UdmSoft-kit

UdmSoft-kit: software plus communication cable for programming UDM35 by means of PC.

UdmSoft: software for programming UDM35/40/60 by means of PC, downloadable from www.carlogavazzi.com.

Type Selection

Slot A (measuring inputs)

LSX: signal inputs: 0.2-2-20mA DC/AC; 0.2-2-20V DC/AC

LSE/ LSF: signal inputs: + AUX: 0.2-2-20mA DC/AC; 0.2-2-20V DC/AC

HSX: signal inputs: 0.2-2-5A DC/AC; 20-200-500V DC/AC

TRX: signal inputs: TC temperature probes (J-K-S-T-E, Pt100-250-500-1000) and resistance (0.02-0.2-2-20kΩ)

TF1: 0.001Hz to 50kHz for DC signals: PNP, NPN, NAMUR, TTL, free of voltage, contacts, voltages up to 14VDC

TF2: 0.001Hz to 50kHz for AC signals: pick-up, voltages up to 500VAC

Slot B (communication)

XX: None

SX: Serial port RS485

SY: Serial port RS232

AV(*): Single analogue output, 0 to 20mA DC and 0 to 10V DC

(*): The two analogue outputs cannot be used at the same time. It is possible to plug in only one module by instrument.

Slot C (communication and alarm)

XX: None

R1: Single relay output, (AC1-8AAC, 250VAC)

R2: Dual relay output, (AC1-8AAC, 250VAC)

R4: Dual relay output, (AC1-8AAC, 250VAC) + dual open collector output (NPN, 100mA)

R5: 4 relay outputs (AC1-5AAC, 250VAC)

AV(*): Single analogue output, 0 to 20mA DC and 0 to 10V DC

Slot D (power supply)

H: 90 to 260V AC/DC

L: 18 to 60V AC/DC

3: 10 to 28V DC

Options

XX: None

TX: Tropicalization

Input specifications

Analogue inputs	Channels and variable
BQ LSX module	1, mA and V DC/AC
BQ LSE/LSF module	1, mA and V DC/AC + AUX
BQ HSX module	1, A and V DC/AC
BQ TRX module	1, temperature
BQ TRX module	1, resistance
BQTF1 module	2, frequency
BQTF2 module	2, frequency
Digital inputs	Incl. in the measuring module
Number of inputs	1 (voltage-free)
Use	key-pad lock Display hold Reset of latch alarms
Contact reading signal	BQ xxx: <0.1mA, <3,5V DC BQ LSE/BQ LSF: <2.5mA, <14V DC BQTF1: <6mA, <7VDC BQTF2: <0.25mA, <3VDC
Close contact resistance	Max 1kΩ
Open contact resistance	Min 500kΩ(BQTFx: 100kΩ)
Insulation	Non-insulated
Accuracy (display, RS485)	See table “Measuring accuracy”, temperature drifts and minimum-maximum indications”
Additional errors	
Humidity	0.3% RDG (BQTFx: 0.05%), 60% to 90% R.H.
Input frequency	0.4% RDG, 62 to 440 Hz
Magnetic field	0.5% RDG (BQTFx: 0.05%) @ 400 A/m
Temperature drift	See table “Measurement accuracy, temperature drifts, and max/min indications”
Sampling rate	500 samples/s @ 50 Hz (escl. BQTFx)
Display refresh time	200 msec @ 50Hz (escl. BQTFx)
Display	BQxxx: 3 1/2 DGT, BQTFx: 4 DGT 7 segments height 14.2 mm
Max and min indication	See table “Measurement accuracy, temperature drifts and max min indications”
Measurements	Current, voltage, temperature, resistance and frequency. For the current and voltage measurements: TRMS measurement of distorted sine waves.
Coupling type	Direct
Crest factor	≤3; A_{Pmax}=1.7In; V_{Pmax}=1.7Un
Input impedance	See table “input impedances and overloads”
Frequency	40 to 440 Hz
Overload	See table “input impedances and overloads”
Compensation	Only temperature measurement module.
RTD	- For Pt 100-250-500-1000, 3-wire connection: up to 10Ω - For resistance measur. with 20Ω range: up to max 0.1Ω - For resistance measurements with ≥200Ω range: up to max 10Ω
TC	Internal cold junction, within temperature range from 0 to +50°C. Automatic or manual compensation from 0 to 50°C.

Measurement accuracy, temp. drifts, max and min indications

All accuracies and min/max indications are referred to an ambient temp. range of 25°C ±5°C, rel. humidity ≤60% and scale ratio (electrical/displayed scale) equal to 1. The conversion into °F is obtained acting on the electrical/displayed scale ratio.

Module	Inputs	Type	Accuracy	Temp. drift	Min. indication (▪)	Max. indicat. (▪)
BQ LSX/ BQ LSE/ BQ LSF	-200µA to +200µA -2mA to +2mA -20mA to +20mA -200mV to +200mV -2V to +2V -20V to +20V	DC/AC	DC: ±(0.1%RDG+3DGT) 0% to 25% FS; ±(0.1%RDG+2DGT) 25% to 110% FS. TRMS (da 45 a 65Hz)*: ±(0.3%RDG+3DGT) 0% to 25% FS; ±(0.3%RDG+2DGT) 25% to 110% FS.	±150 ppm/°C	- 199.9 - 1.999 - 19.99 - 199.9 - 1.999 - 19.99	+ 199.9 + 1.999 + 19.99 + 199.9 + 1.999 + 19.99

* <45Hz >65Hz= ±(0.5%RDG+3DGT) 0% to 25% FS; ±(0.5%RDG+2DGT) 25% to 110% FS.

(▪) The min. indication for TRMS measurement (AC or DC) is 0; it is possible to modify the decimal point position.

Measurement accuracy, temp. drifts, max and min indications (cont.)

All accuracies and min/max indications are referred to an ambient temp. range of 25°C ±5°C, rel. humidity ≤60% and scale ratio (electrical/displayed scale) equal to 1. The conversion into °F is obtained acting on the electrical/displayed scale ratio.

Module	Inputs	Type	Accuracy	Temp. drift	Min. indication (■)	Max. indicat. (■)
BQ HSX	-200mA to +200mA -2A to +2A -5A to +5A -20V to +20V -200V to +200V -500V to +500V	DC/AC	DC: ±(0.1%RDG+3DGT) 0% to 25% FS; ±(0.1%RDG+2DGT) 25% to 110% FS. TRMS (45 to 65Hz)*: ±(0.3%RDG+3DGT) 0% to 25% FS; ±(0.3%RDG+2DGT) 25% to 110% FS.	±150 ppm/°C	- 199.9 - 1.999 - 5.00 - 19.99 - 199.9 - 500	+ 199.9 + 1.999 + 5.00 + 19.99 + 199.9 + 500
BQ TRX Thermo-couple	-50°C to +760°C -58 °F to +1400 °F -200°C to +1260°C -328 °F to +2300°F -200°C to +1000°C -328°F to +1832°F -50°C to +1750°C -58°F to +3182°F -200°C to +400°C -328°F to +752°F	J J K K E E S S T T	±(0.2%RDG+1DGT) ±(0.2%RDG+2DGT) ±(0.2%RDG+2DGT) ±(0.2%RDG+4DGT) ±(0.2%RDG+2DGT) ±(0.2%RDG+4DGT) ±(0.2%RDG+2DGT) ±(0.2%RDG+4DGT) ±(0.2%RDG+2DGT) ±(0.2%RDG+4DGT)	±150 ppm/°C	- 50°C - 58°F - 200°C - 328°F - 200°C - 328°F - 50°C - 58°F - 200°C - 328°F	+ 760°C + 1400°F + 1260°C + 2300°F + 1000°C + 1832°F + 1750°C + 3182°F + 400°C + 752°F

* <45Hz >65Hz= ±(0.5%RDG+3DGT) 0% to 25% FS; ±(0.5%RDG+2DGT) 25% to 110% FS.
(■) The min. indication for TRMS measurement (AC or DC) is 0; it is possible to modify the decimal point position.

Module	Inputs	Type	Accuracy	Temp. drift	Min. indication	Max. indicat.
BQ TRX Ther-moresis-tance	-200°C to +850°C -328°F to +1562°F -200.0°C to +200.0°C -328°F to+392°F -200.0°C to +200.0°C -328°F to +392°F -200.0°C to +200.0°C -328°F to +392°F -200.0°C to +200.0°C -328°F to +392°F -60°C to +180°C -76°F to +356°F	Pt100 Pt100 Pt100 Pt100 Pt250 Pt250 Pt500 Pt500 Pt1000 Pt1000 Ni100 Ni100	±(0.2%RDG +2DGT) ±(0.2%RDG +4DGT) ±(0.5%RDG +5DGT) ±(0.5%RDG +5DGT) ±(0.5%RDG +5DGT) ±(0.5%RDG +5DGT) ±(0.5%RDG +5DGT) ±(0.5%RDG +5DGT) ±(0.5%RDG +5DGT) ±(0.5%RDG +5DGT) ±(0.5%RDG +1DGT) ±(0.5%RDG +2DGT)	±150 ppm/°C	- 200 - 328 - 200.0 - 328.0 - 200.0 - 328.0 - 200.0 - 328.0 - 200.0 - 328.0 - 60 - 76	+ 850 + 1562 + 200.0 + 392.0 + 200.0 + 392.0 + 200.0 + 392.0 + 200.0 + 392.0 + 180 + 356
BQ TRX Resis-tance	0 to 20Ω 0 to 200Ω 0 to 2000Ω 0 to 20.00kΩ		±(0.2%RDG+2DGT) 25% to 110% FS ±(0.2%RDG+3DGT) 0% to 25% FS	±150 ppm/°C	0 0 0 0	19.99 **(■)** 199.9 **(■)** 1999 **(■)** 19.99 **(■)**
BQ TF1	NPN (DC) PNP (DC) NAMUR (DC) TTL (DC) Free of voltage con-tact (DC)		0.001% RDG ±3 digit	± 50 ppm/°C	0.000 **(*)** 00.00 **(*)** 000.0 **(*)** 0000 **(*)**	9.999 99.99 999.9 9999
BQ TF2	Pick-up (AC) Voltage (AC) up to 100VAC Voltage (AC) up to 500VAC		0.001% RDG ±3 digit	± 50 ppm/°C	0.000 **(*)** 00.00 **(*)** 000.0 **(*)** 0000 **(*)**	9.999 99.99 999.9 9999

(■) It is possible to modify the decimal point position.
(*) The min indication is -9.99999, ..., -999999 in case of “rotation speed detection” function

Input impedances and overloads

Module	Inputs	Type	Impedance	Overload (continuous)	Overloads (1s)
BQ LSX/ BQ LSE/ BQ LSF	-200μA to +200μA -2mA to +2mA -20mA to +20mA -200mV to +200mV -2V to +2V -20V to +20V	DC/AC DC/AC DC/AC DC/AC DC/AC DC/AC	≤2,2kΩ ≤22Ω ≤22Ω ≥2,2kΩ ≥200kΩ ≥200kΩ	5mA 50mA 50mA 10V 50V 50V	10mA 150mA 150mA 20V 100V 100V
BQ HSX	-200mA to +200mA -2A to +2A -5A to +5A -20V to +20V -200V to +200V -500V to +500V	DC/AC DC/AC DC/AC DC/AC DC/AC DC/AC	≤1Ω ≤0.012Ω ≤0.012Ω ≥2MΩ ≥2MΩ ≥2MΩ	0.8A 7.5A 7.5A 750V 750V 750V	1A 100A 100A 1000V 1000V 1000V
BQ TRX Thermo- couple	-50°C to +760°C -58 °F to +1400 °F -200°C to +1260°C -328 °F to +2300°F -200°C to +1000°C -328°F to +1832°F -50°C to +1750°C -58°F to +3182°F -200°C to +400°C -328°F to +752°F	J J K K E E S S T T	I_{LK} <0.5μA	Max 5V	Max 10V
BQ TRX Thermo- resistance	-200°C to +850°C -328°F to +1562°F -200.0°C to +200,0°C -328°F to +392°F -200.0°C to +200,0°C -328°F to +392°F -60°C to +180°C -76°F to +356°F	Pt100 Pt100 Pt250/Pt100 Pt250/Pt100 Pt1000/Pt500 Pt1000/Pt500 Ni100 Ni100	800μA (*) 800μA (*) 90μA (*) 90μA (*) 800μA (*) 800μA (*) 800μA (*) 800μA (*)	Max 5V	Max 10V
BQ TRX Resistance	0 to 20Ω 0 to 200Ω 0 to 2000Ω 0 to 20.00kΩ		800μA (*) 90μA (*) 800μA (*) 90μA (*)	Max 5V	Max 10V
BQ TF1	NPN (DC) PNP (DC) NAMUR (DC) TTL (DC) Free of voltage contact (DC)		600 Ω 600 Ω 600 Ω 600 Ω	15 VAC/DC 15 VAC/DC 15 VAC/DC 15 VAC/DC 15 VAC/DC	20 VAC/DC 20 VAC/DC 20 VAC/DC 20 VAC/DC 20 VAC/DC
BQ TF2	Pick-up (AC) Voltage (AC) up to 100VAC Voltage (AC) up to 500VAC		220 kΩ 950 kΩ	120 VAC/DC 600 VAC/DC	200 VAC/DC 600 VAC/DC

(*) Maximum measuring current generated for resistance equal to 0

Output specifications

RS422/RS485	**(on request)**
	Module: BR SX
Serial output	Bidirectional (static and dynamic variables).
LED	Display of data reception/transmission
Connections	Multidrop, 2 or 4 wires,
Distance	1000 m
Terminalization	Directly on the module by means of jumper
Addresses	1 to 255, selectable by means of key-pad
Protocol	MODBUS RTU/JBUS
Data (bidirectional)	
Dynamic (reading only)	Measurement, min value max value alarm status
Static (reading/writing)	All programming parameters, min max reset reset of latch alarm
Data format	8 data bit, no parity, 1 stop bit
Baud rate	selectable 4800, 9600,19200 and 38400 bit/s
Insulation	By means of opto-couplers 4000 V_{rms} output to measuring inputs 4000 V_{rms} output to power supply input

RS232	**(on request)**
	Module: BR SY
Serial output	Bidirectional (static and dynamic variables)
Connections	3 wires,
Distance	max. 15m
Data format	1 start bit, 8 data bit, no parity, 1 stop bit
Baud rate	Selectable 4800, 9600, 19200 and 38400 bit/s
Other features	Same as RS422/485

Alarm outputs	**(on request)**
Alarm type	Over-range alarm, up alarm, down alarm, down alarm with start-up deactivation up alarm with latch, down alarm with latch
Alarm set-point	Adjustable from 0 to 100% of displayed electric range
Hysteresis	0 to 100% of displayed range
On-time delay	0 to 255 s
Off-time delay	0 to 255 s
Output status	Selectable: normally energized /de-energized
Min response time	500 ms, with filter excluded, without alarm activation delay
Output channels	1 with module BO R1 (relay output). 2, independent with module BO R2 (2 relay outputs). 4, independent with module BO R4 (2 relay outputs + 2 open collector outputs). BO R5 (4 relay outputs)
Relay output BO R1, R2, R4	Type SPDT AC 1: 8A, 250VAC DC 12: 5A, 24VDC AC 15: 2.5A, 250VAC DC 13: 2.5A, 24VDC
Relay output BO R5	Type SPST (NO) AC 1: 5A, 250VAC DC 12: 3A, 24VDC AC 15: 1,5A, 250VAC DC 13: 1,5A, 24VDC
Insulation	4000 V_{RMS} output to measuring input, 4000 V_{RMS} output to power supply input.
Open collector output	NPN transistor type V_{ON} 1.2 VDC/ max. 100 mA V_{OFF} 30 VDC max.
Insulation	By means of opto-couplers 4000 V_{RMS} output to measuring input 4000 V_{RMS} output to power supply input

Analogue output	**(on request)**
	Module: BO AV
Range	0 to 20 mADC, 0 to 10 VDC
Scaling factor	Programmable within the entire retransmission range; allows to manage the retransmission of all the values from 0 to 20 mA / 0 to 10V
Accuracy	± 0.2% FS (@ 25°C ± 5°C)
Response time	≤ 10 ms
Termperature drift	± 200 ppm/°C
Load: 20 mA output	≤ 700 Ω
10 V output	≥ 10 kΩ
Insulation	By means of opto-couplers 4000V_{rms} output to measuring input 4000V_{rms} output to power supply input
Notes:	The two outputs cannot be used at the same time.

Excitation output	**(on request)**
BQ LSE Module	
Voltage	13 VDC ±10%, max. 50 mA
BQ LSF Module	
Voltage	25 VDC ±10%, max. 25 mA
BQTF1 Module	
Voltage 1	8.2VDC ±10%, max 10mA.
Voltage 2	13VDC ±10%, max 40mA.
Insulation	25V_{RMS} output to measuring input 4000 V_{RMS} output to power supply input

Software functions

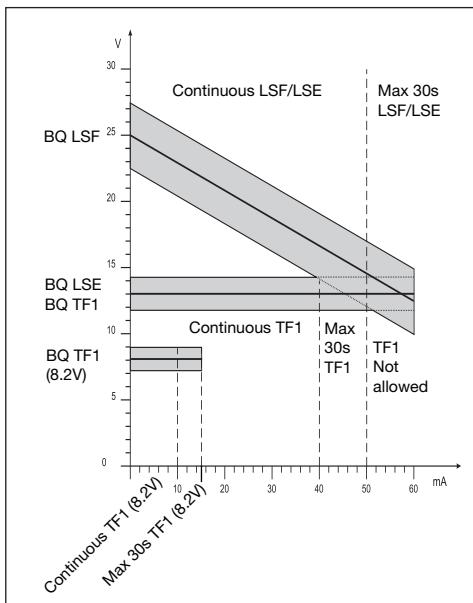
Min / Max storage	Automatic storage (in the EEPROM) of the minimum and maximum measured value from the previous memory reset
Password	Numeric code max 4 dgt 2 levels of data protection.
1st level	0 to 4999 completly protected.
2nd level	5000 to 9999 access to programming is protected . Alarm set-points are directly programmable from the measuring mode.
Measurement selection	Depending on the module: measuring range and type of probe (resistance, RTD thermoresistance, TC thermocouple) or measuring type (TRMS or DC).
Function (only BQTFx)	Displayed functions of channel A and B: F1: scaled value of channel A; F2: 1/A; F3: A-B; F4: (A-B)/B*100; F5: A/B; F6: B/(A+B)+100; F7: rotation sensing.
Integration time selection	Automatic or from 100.0 to 999.9 ms only in the current and voltage measurement. (BQTFx excluded)
Scaling factors	
Operating mode	Electrical scale compression, displayed scale compression/expansion (max. 2 without filter, up to 10 with filter)
Electrical range	Programmable within the whole measuring range
Decimal point position	Programmable within the display range
Displayed range of the variable	Programmable within the display range
Pulse per revolution	BQTFx only: programmable from 1 to 9999
Input engineering unit	BQTFx only: programmable among Hz, kHz, rpm, krpm, rph, krph
Diagnostics	The display flashes when the limits of the display range are exceeded and the data are updated up to 20% of the rated display range.
Burn-out:	Only temperature inputs
TC	Opening of probe’s connection: EEE indication
RTD	Opening of probe’s connection: EEE indication probe’s short circuit: -EEE indication.
BQTFx	Exceeding of frequency range: Err indication
Digital filter	
Filter operating range	0 to 9999
Filtering coefficient	1 to 32
Display selection	3 1/2 DGT or 3 DGT plus dummy zero (BQTFx excluded) 4 DGT on BQTFx
Scaling	Selection of min value of the input range. Selection of max value of the input range. Selection of decimal point position. Selection of min display value. Selection of max display value.
UdmSoft	Software for programming UDM35 by means of PC (Windows 95, 98se, ME, XP) by means of serial port RS485 and relevant connection cable. The software is available in English, Spanish, Italian, German and French. See also “Programming of UDM35 by means of PC”.

Supply Specifications

AC/DC voltage	90 to 260V (standard)
DC voltage only	18 to 60V (on request) 10 to 28V (on request)
Energy consumption	≤ 30VA/12W (90 to 260V) ≤ 20VA/12W (18 to 60V) ≤ 7.5W (10 to 28V)

General Specifications

Operating temperature	0° to 50°C (32° to 122°F) (H.R. < 90% non-condensing)
Storage temperature	-10° to 60°C (14° to 140°F) (H.R. < 90% non-condensing)
Insulation reference voltage	300 V_{RMS} to ground (500V input)
Insulation	See table "Insulation between inputs and outputs"
Dielectric strength	4000 V_{RMS} for 1 minute
Rejection	
NMRR	40 dB, 40 to 60 Hz
CMRR	100 dB, 40 to 60 Hz
EMC	EN61000-6-2, IEC61000-6-2 EN61000-6-3, IEC61000-6-3
Safety Standards	
Safety	EN 61010-1, IEC 61010-1
Connections	Screw type
Cable cross-section area	Max. 2.5 mm²; Min./Max. screws tightening torque: 0.4 Nm / 0.6 Nm
Housing	
Dimensions	1/8 DIN, 48 x 96 x 105 mm
Material	PC-ABS, self-extinguishing: UL 94 V-0
Protection degree	Front: IP67, NEMA12 Connections: IP20
Weight	520 g approx (included all modules and packing)
Approvals	CE, UR, CSA

Excitation output

Insulation between inputs and outputs

	Meas. inputs	Relay output	Static output	Analogue output	Serial Port	AUX p.supply	90-260VAC/ DC p.supply	18-60VAC/ DC p.supply
Meas. inputs	-	4kV	4kV	4kV	4kV	25V	4kV	4kV
Relay Output	4kV	-	2kV	4kV	4kV	4kV	4kV	4kV
Static Output	4kV	2kV	-	4kV	4kV	4kV	4kV	4kV
Analogue Output	4kV	4kV	4kV	-	4kV	4kV	4kV	4kV
Serial Port	4kV	4kV	4kV	4kV	-	4kV	4kV	4kV
AUX p.supply	25V	4kV	4kV	4kV	4kV	-	4kV	4kV
90-260VAC/ DC p.supply	4kV	4kV	4kV	4kV	4kV	4kV	-	-
18-60VAC/ DC p.supply	4kV	4kV	4kV	4kV	4kV	4kV	-	-

Available modules

Type	N. of channels	Ordering code
UDM35 main unit		BD 35
DC/AC input: 200µA , 2mA, 20mA, 200mA, 2V, 20V	1	BQ LSX
DC/AC input: 200µA , 2mA, 20mA, 200mA, 2V, 20V + excitation output	1	BQ LSE/ BQ LSF
DC/AC input: 200mA, 2A, 5A, 20V, 200V, 500V	1	BQ HSX
Input: 20Ω, 200Ω, 2kΩ, 20kΩ	1	BQ TRX
TC: J-K-S-T-E, Pt100-250-500-1000	1	BQ TRX
Pulse signals input: 0.001Hz to 50kHz for DC signals	2	BQ TF1
Pulse signals input: 0.001Hz to 50kHz for AC signals	2	BQ TF2
Analogue output 0 to 20mA, 0 to 10VDC	1	BO AV
Relay output	1	BO R1
Relay output	2	BO R2
Outputs: 2 relays + 2 open collectors	4	BO R4
Relay output	4	BO R5
RS485 Serial Port	1	BR SX
RS232 Serial Port	1	BR SY
Power supply 18 to 60V AC/DC		BP L
Power supply 90 to 260V AC/DC		BP H
Power supply 10 to 28V DC		BP 3

Possible module combinations

Basic Unit	Slot A	Slot B	Slot C	Slot D
Measuring inputs: LSX, LSE, LSF, HSX, TRX, TF1, TF2	●			
RS485 Serial port: SX		●		
RS232 Serial port: SY		●		
Analogue output: AV (*)		●	●	
Relay outputs and/or open collector: R1, R2, R4, R5			●	
Power supply: H, L, 3				●

(*) Up to 1 module max.

Used calculation formulas

Only for TRMS Measurements

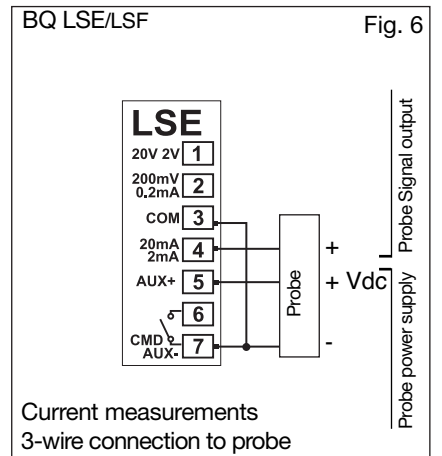
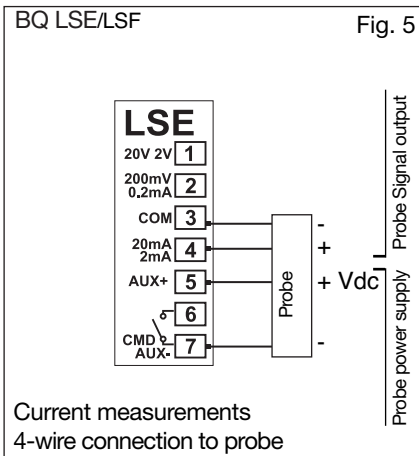
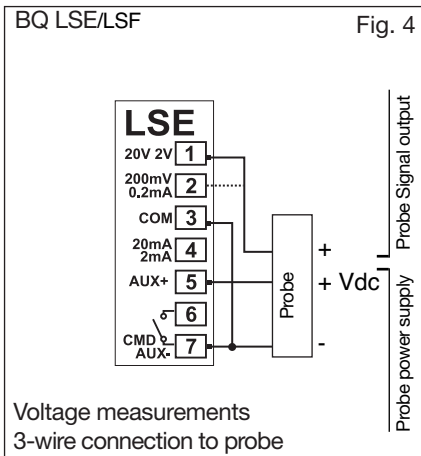
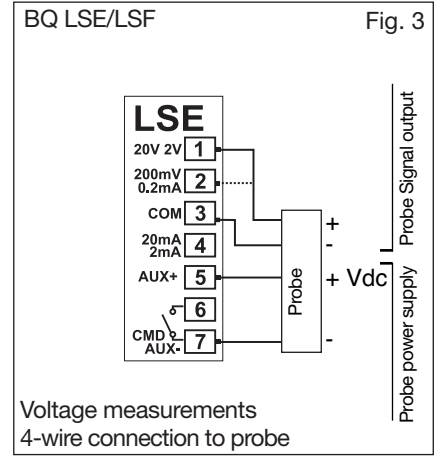
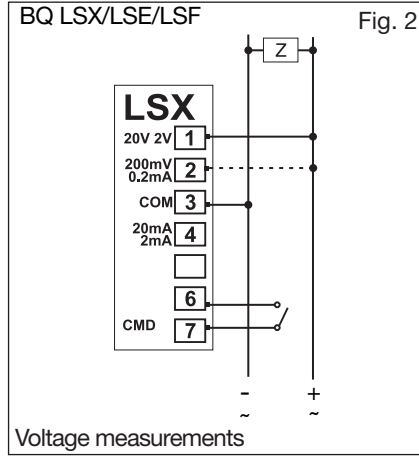
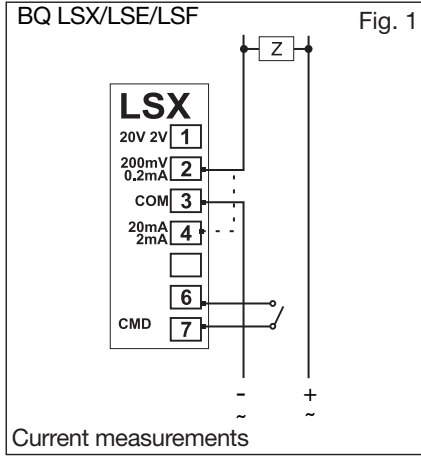
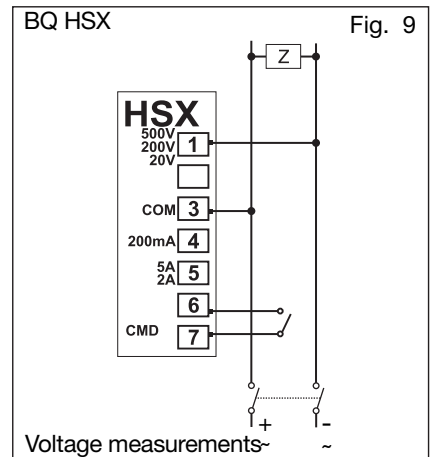
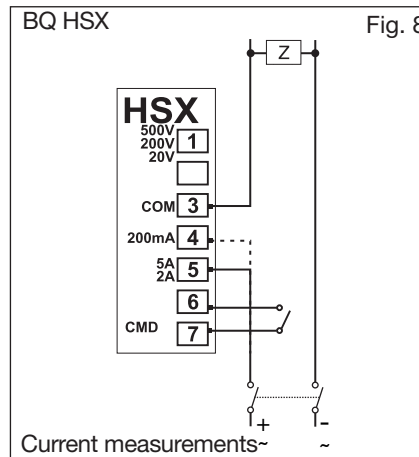
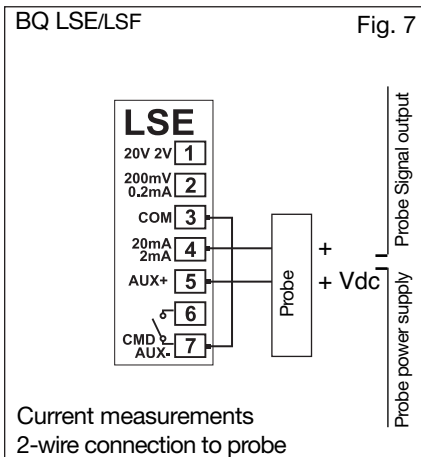
Instantaneous effective voltage (TRMS)

$$V_1 = \sqrt{\frac{1}{n} \cdot \sum_1^n (V_1)_i^2}$$

Instantaneous effective current (TRMS)

$$A_1 = \sqrt{\frac{1}{n} \cdot \sum_1^n (A_1)_i^2}$$

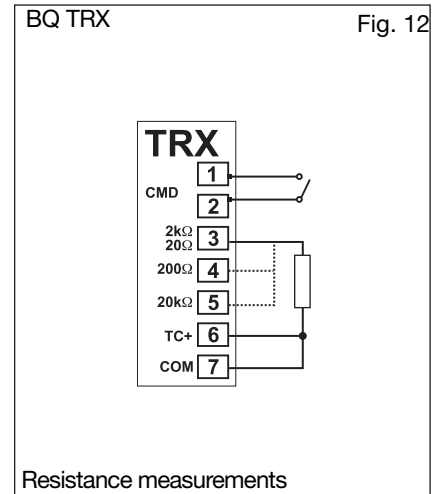
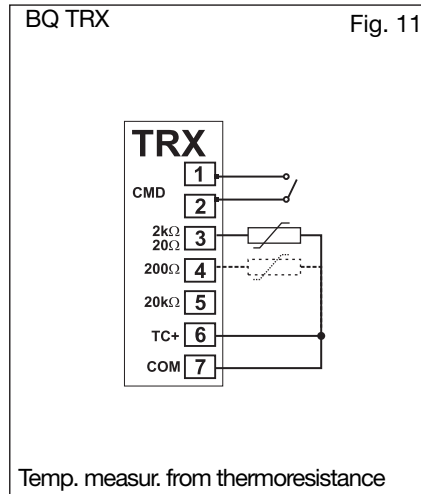
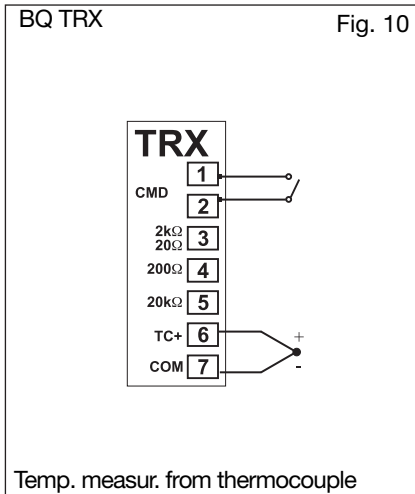
Wiring diagrams

Process signal wiring diagrams

Wirings for high-level signals

Wiring diagrams (cont.)

Wiring diagrams for temperature measurements

Temp. measur. from thermocouple

Temp. measur. from thermoresistance

Resistance measurements

Wiring diagrams for frequency measurements

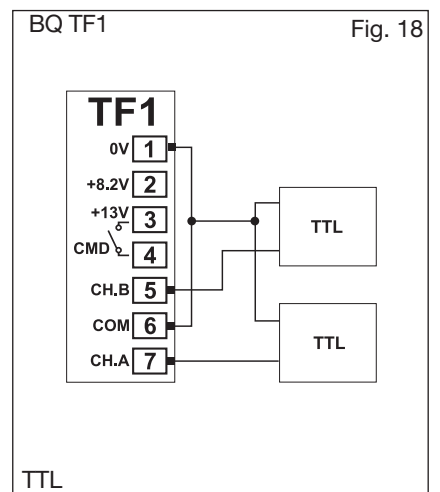
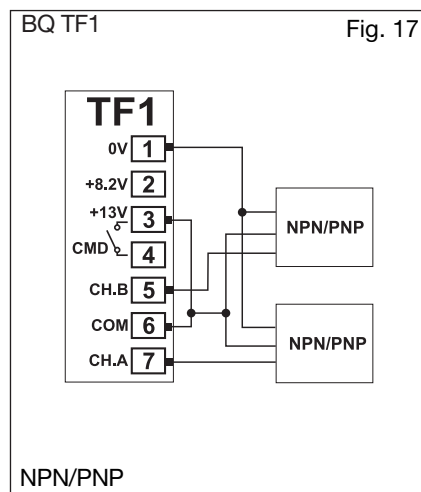
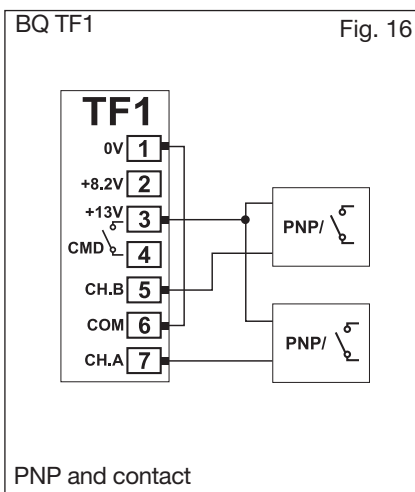
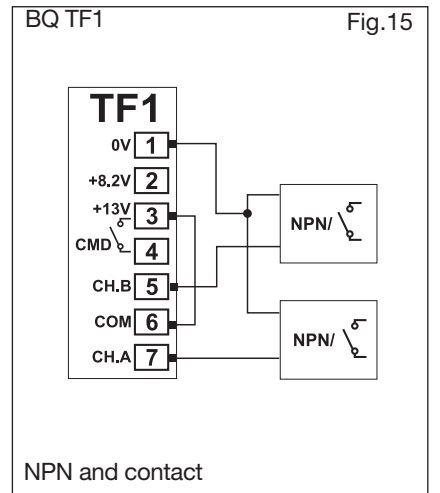
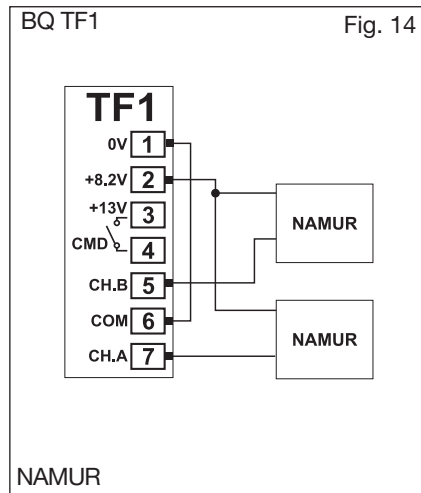
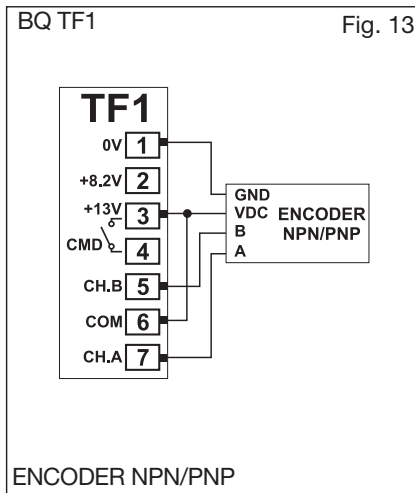
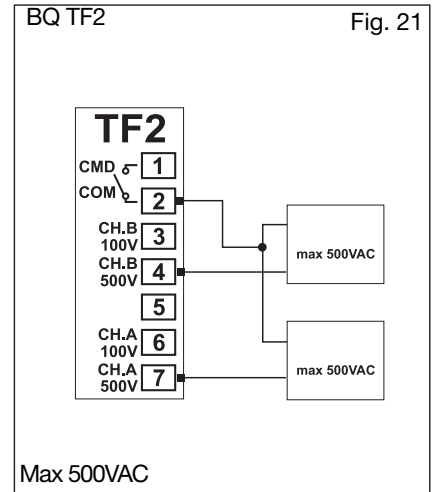
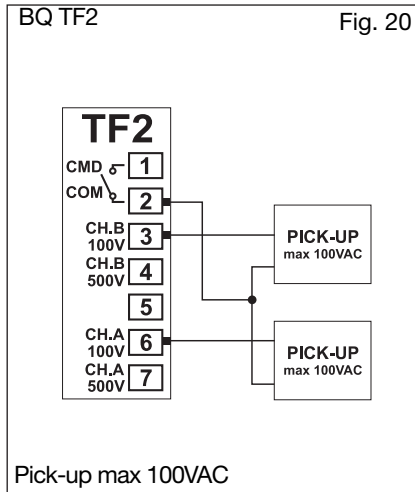
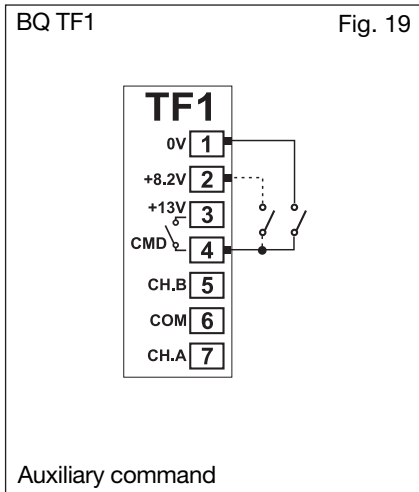
ENCODER NPN/PNP

NAMUR

NPN and contact

PNP and contact

NPN/PNP

TTL

Wiring diagrams (cont.)

Wiring diagrams for power supply

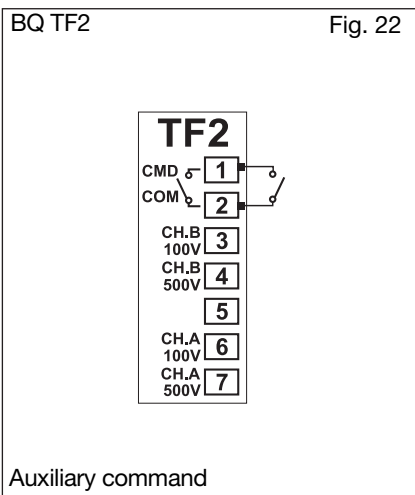
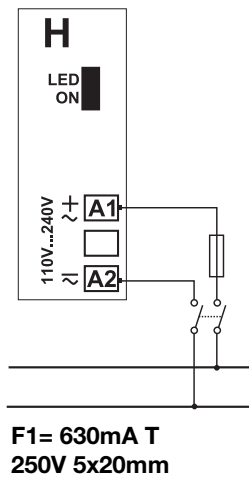
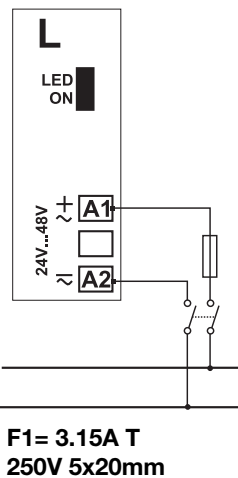
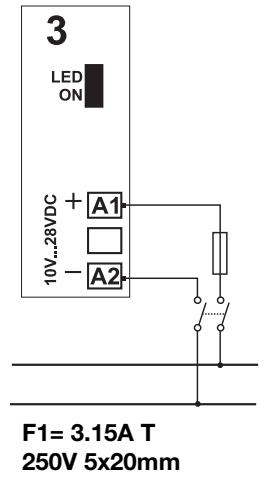
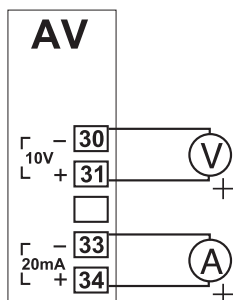
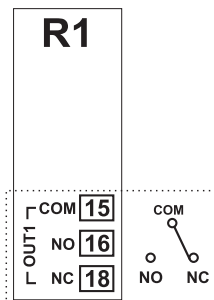
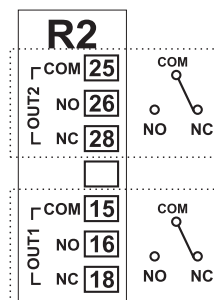
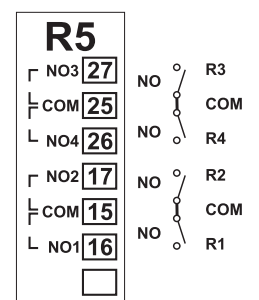
BP H: power supply

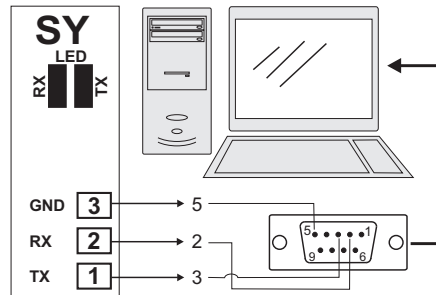
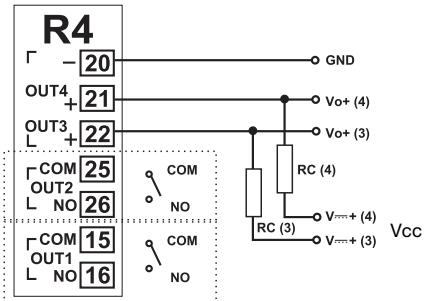
F1= 630mA T
250V 5x20mm

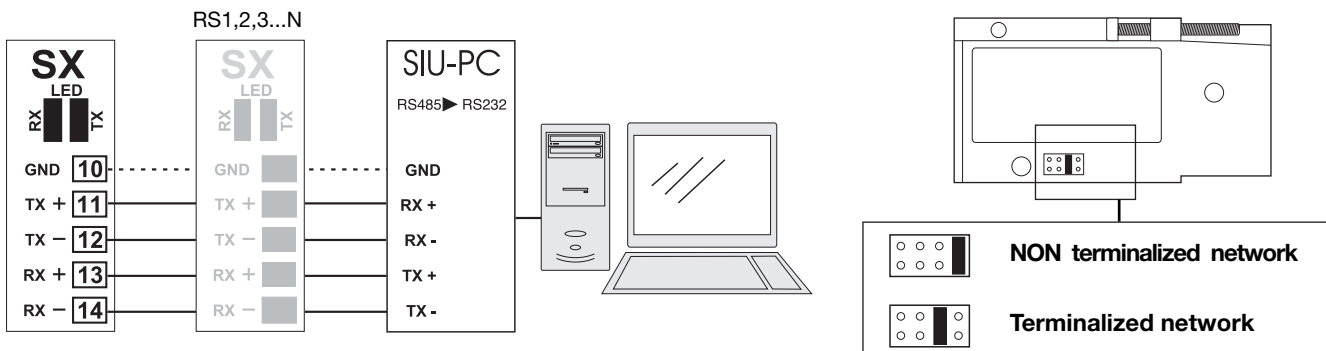
BP L: power supply

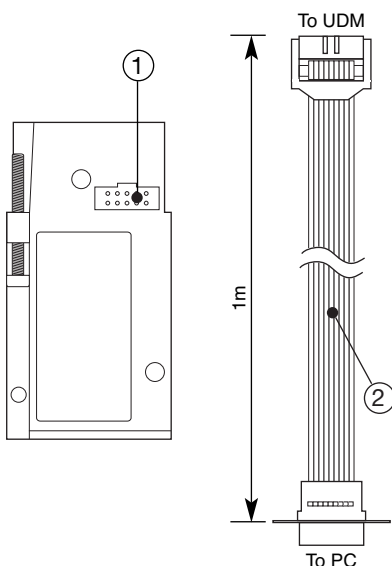
F1= 3.15A T
250V 5x20mm

BP 3: power supply

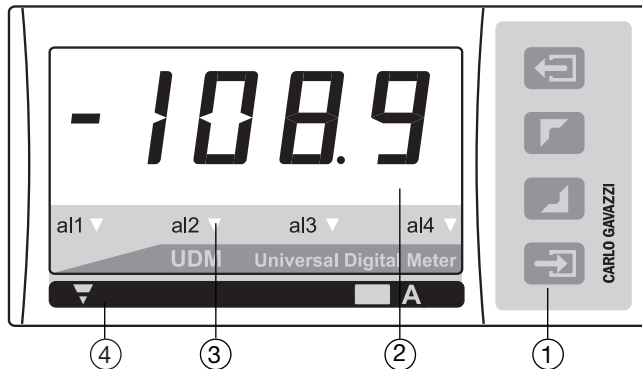
F1= 3.15A T
250V 5x20mm

Wiring diagrams of optional modules

BO AV: analogue output (10V, 20mA DC)

BO R1: 1 relay output

BO R2: 2 relay outputs

BO R5: 4 relay outputs

Wiring diagrams of optional modules (cont.)

BO SY: RS232 direct connection to PC by means of COM port. RS232 has no terminalization.

BO R4: dual relay output + dual open collector output: the load resistances (Rc) must be designed so that the close contact current is lower than 100mA; the VDC voltage must be lower than or equal to 30VDC.
VDC: power supply output
Vo+: positive output (open collector transistor).
GND: ground (open collector transistor).

BR SX: RS485 4-wire connection: additional devices provided with RS485 port (indicated as RS1,2,3...N) are connected in parallel. The termination of the serial port is carried out only on the last instrument of the network. The serial module is provided with a jumper for the termination of the RS485 network as shown in the figure above.
Note: particular types of cables or plants may require an external termination. For the network connections use twisted cable type AWG26.

Programming UDM35 by means of PC

UDM35 is programmable by PC by means of the UdmSoft software (available on request). The user can program all parameters of UDM35 that will be subsequently uploaded and set in the instrument by the RS485 network (BRSX).
Should UDM35 be without the RS485 serial module, all programming parameters will be uploaded and set in the instrument by the RS232 auxiliary serial connection (1) located on the side of the measuring input module using the special connection cable (2) available on request, as shown in the figures on the left. It is also possible to program the instrument using the dot connector (1) by means of the HyperTerminal Windows functions of a PC.

Note: the RS232 auxiliary port IS NOT insulated from the measuring inputs.

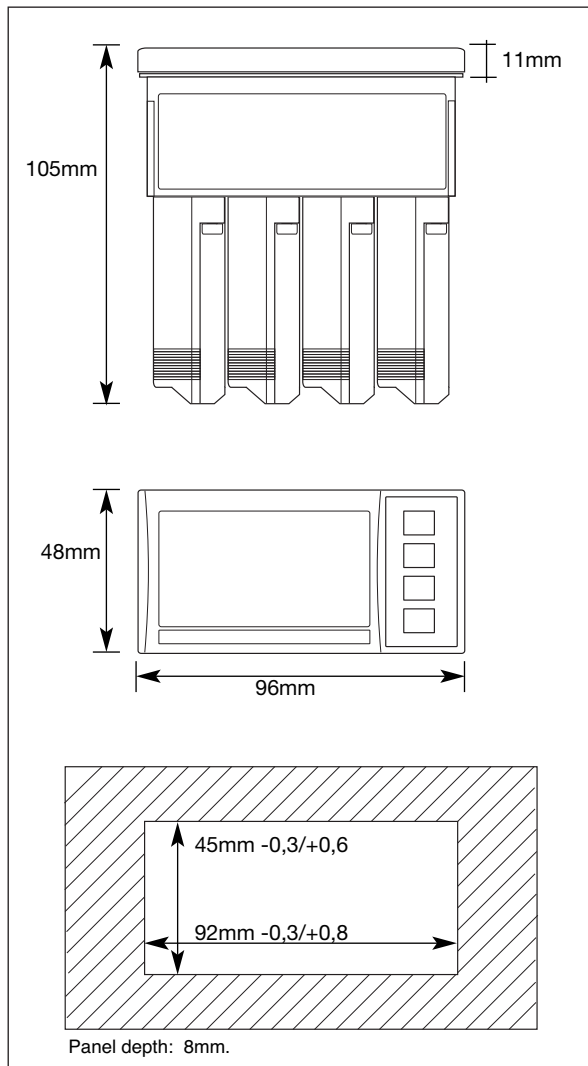
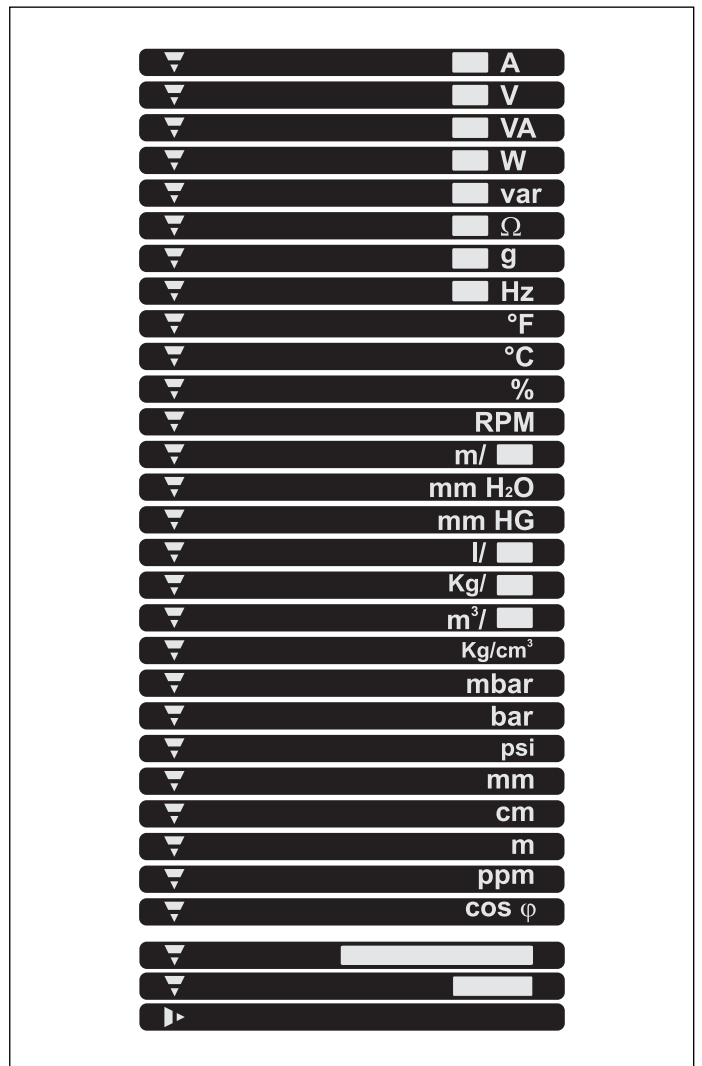
Front panel description

1. **Key-pad**
   The programming of the configuration parameters and the display may be easily controlled by means of the 4 function keys.
   : to enter the programming phase and to confirm the password.
   :
   - to program values;
   - to select functions;
   - to scroll display pages.

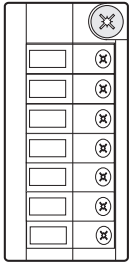
   : for special functions.
2. **Display**
   Instantaneous measurements:
   - 3 1/2 digit (max display 1999).
   - 4 digit (max display 9999) for tachometer measurements.

   Alphanumeric indications by means of LED display for:
   - Display of configuration parameters;
   - The measured variable.
3. **Alarm status LED**
   Display any alarm condition
4. **Engineering unit**
   The instrument is supplied with a complete set of self-sticking labels with the main engineering units.

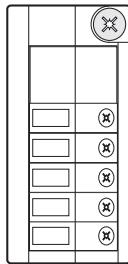
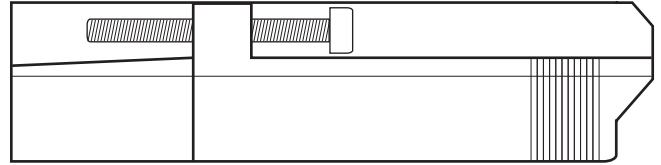
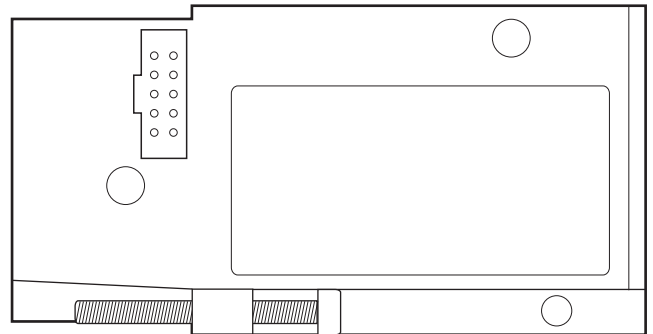
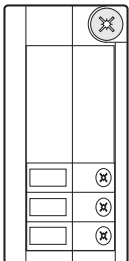
Dimensions

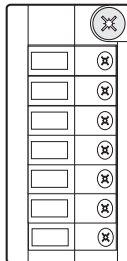
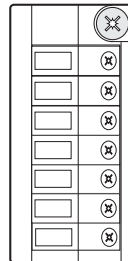
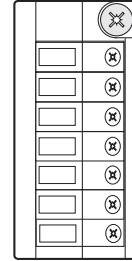
Engineering Units

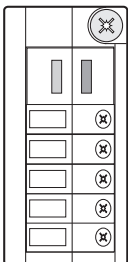
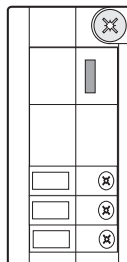
A
V
VA
W
var
Ω
g
Hz
°F
°C
%
RPM
m/
mm H_2O
mm HG
l/
Kg/
m^3/
Kg/cm^3
mbar
bar
psi
mm
cm
m
ppm
cos φ

Modules

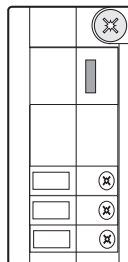
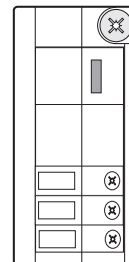
Scale 1:1

Input modules

BQ LSX, BQ LSE, BQ LSF, BQ HSX, BQ TRX, BQ TF1, BQ TF2
Measuring inputs

Output modules

BO AV
Single analogue output 10V, 20mA DC

Output modules

BO R1
Single relay output

BO R2
Dual relay output

BO R4
Dual relay output +
Dual open collector

BO R5
4 relay outputs

Serial port modules

BR SX
RS485 Serial port

BR SY
RS232 Serial port

Power supply modules

BP H
Power supply:
60 to 260V AC/DC

BP L
Power supply:
18 to 60V AC/DC

BP 3
Power supply:
10 to 28V DC